IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of: Swartz et al.	Attorney Docket No.: GENSP052
Application No.: 10/707,074	Examiner: Richer, Aaron M.
Filed: November 19, 2003	Art Unit: 2628
Title: REAL TIME DATA STREAM PROCESSOR	Confirmation No.: 1073

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I hereby certify that this correspondence is being transmitted electronically through EFS-WEB to the Commissioner for Patents, P.O. Box 1450 Alexandria, VA 22313-1450 on May 21, 2007.

Signed: /Linda L. Quintana/ .
Linda L. Quintana

PRE-APPEAL BRIEF REQUEST FOR REVIEW

Mail Stop AF
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

Applicants request review of the final rejection in the above-identified application. No amendments are being filed with this request.

This request is being filed with a Notice of Appeal.

The review is requested for the reasons stated below.

REMARKS

Examiner Failed to Show Teachings for Several Claim Limitations and Sufficient Motivation to Modify such Teachings

The final Office Action dated November 24, 2006 rejected claims 1-4, 8, 11-15, 19, 22-25, 30, 33 and 34 under 35 U.S.C. 102(b) as being anticipated by Perlman (U.S. Publication 2002/0135696; hereinafter “Perlman”), claims 7, 18 and 29 under 35 U.S.C. 103(a) as being unpatentable over Perlman in view of Naegle (U.S. Publication 2004/0012577; hereinafter “Naegle”) and claims 9, 20 and 31 under 35 U.S.C. 103(a) as being unpatentable over Perlman.

It is respectfully submitted that the cited references, either individually or in combination, do not disclose every limitation recited in the pending claims.

Specifically, with respect to independent claims 1, 12 and 23, the cited references and particularly Perlman do not disclose at least the following recited limitation: synchronizing each converted data stream to an output frame rate consistent with the first set of display attributes. In other words, Perlman does not disclose the use of any *frame rate conversion* to synchronize the source material to a frame rate consistent with the display, because Perlman requires an ad hoc correction (flicker filter) to be applied in order to reduce image flicker when displaying progressive images on an interlaced display.

Referring to paragraphs [0027]-[0028] and Fig. 3B of Perlman, if the display is interlaced, and some of the source content is not interlaced (i.e., progressive scan), then Perlman displays the progressive scan source material on an interlaced display concurrently with the interlaced source material. Perlman requires that a flicker filter *must* be applied in order to reduce image flicker when displaying progressive images on an interlaced display since interlaced displays refresh, or update their images, at a significantly slower rate (i.e., frame rate) than personal computer displays. Therefore, not only does Perlman not convert the incoming source material to a format consistent with the display (Perlman displays progressive scan source material on an interlaced display), Perlman must then provide an ad hoc correction (flicker filter) *since there is no frame rate conversion used to synchronize the source material to a frame rate consistent with the display as is required by the invention* (i.e., since there is no frame rate conversion performed to synchronize the source material to the display and interlaced displays refresh, or update their images, at a significantly slower rate than personal computer displays, a noticeable flicker will occur due to the mismatch in the frame rate of the video and the refresh rate of the display).

In contrast, the instant application specifically requires a frame rate converter to synchronize each converted data stream to be consistent with the display screen thereby obviating the need for a flicker filter. For example, independent claim 1 recites that the video processor comprises, in part, a number of configurable image converter units each coupled to an associated one of the ports for converting the corresponding input video stream to a corresponding converted video stream having the single display video format; and a configurable frame rate conversion unit configured to synchronize each converted data stream to an output frame rate consistent with the first set of display attributes. Similarly limitations are recited in independent claims 12 and 23.

The final Office Action states that one skilled in the art would recognize a de-interlacer to change rate of video, and this de-interlacer is "interpreted as some sort of line doubler." The final Office Action argues that, "since, in interlaced format, a frame is equal to two fields, by de-interlacing, the frame rate is doubled." This assertion is respectfully traversed.

Progressive scan and interlaced scan are two commonly used methods for displaying an image or video on a television screen. With "progressive scan," the lines are drawn one at a time in sequential order (see "http://www.webopedia.com/TERM/p/progressive_scan.html"). In contrast, interlaced scan uses two fields to create a frame, with one field containing all the odd lines in the image and the other field containing all the even lines of the image (see "http://www.webopedia.com/TERM/I/interlaced_scan.html"). Typically, with interlaced scan, 60 fields (30 odd and 30 even) are scanned every second, and the two sets of 30 fields are combined to create a full frame every 1/30th second, resulting in a display of 30 frames per second. On the other hand, with progressive scan, the entire single frame image is painted every 1/30th, 1/60th of a second and so on eliminating interlacing artifacts (such as mis-match between odd/even lines resulting in "jaggies"). Because of the different methods for handling the video between progressive scan and interlaced scan, an interlaced video cannot be displayed on a progressive display device in its native format but requires a de-interlaced process to be performed on the interlaced video first, and vice versa.

As explained in the Office Action Response titled "Amendment G" filed on February 14, 2007, de-interlacing does not change the *frame* rate of the video source. In this respect, it appears that the Examiner has confused the concept of "frame rate" with the concept of "field rate." On the one hand, frame rate is the number of complete frames per second (fps) in the video stream. Both interlaced video and progress scan video have frame rates. On the other hand, *field* rate is a concept that only applies to interlaced video. When a video stream is interlaced, each frame is scanned first with odd lines, then with even lines. Such scan of every second line is called a "field." Thus, odd lines are called "odd field," and even lines are called "even field." Field rate refers to the number of odd or even fields per second in the interlaced video stream (see http://en.wikipedia.org/wiki/Interlaced). For example, assume a video stream has a frame rate of 30 fps. After this video stream is interlaced into odd and even fields, it has a *field* rate of 60 fields-per-second. However, its *frame* rate does not change and remains at 30 frames-per-second.

Furthermore, one skilled in the art understands that de-interlacing is "the process of converting interlaced video (a sequence of fields) into a non-interlaced form (a sequence of frames)" (see http://en.wikipedia.org/wiki/De-interlacing). Although de-interlacing is sometimes referred to as "line doubling," there are many different types of de-interlacing algorithms. Broadly speaking, de-interlacing methods may be categorized into two large groups: *combination*, where the even and odd frames are combined into one image and then displayed, and *extension*, where each frame (with only half the lines) is extended to the entire screen. Regardless of which de-interlacing algorithm is used, the *frame* rate of the video stream does not change after the de-interlacing process.

The final Office Action further indicates that a progressive image displayed on an interlaced display is *inherently* interlaced. This assertion is respectfully traversed. When a progressive image is displayed on an interlaced display in its native un-interlaced format, the image is distorted. This is why the image needs to be interlaced *before* it is sent to the interlaced display device. Interlacing is not done automatically whenever a progressive image is sent to an interlaced display. It must be performed as a separate step. Similarly, when an interlaced video is sent to a progressive scan display device, the interlaced video needs to be de-interlaced *before* it may be displayed on the progressive display device. The de-interlacing process is an additional step separate from the display process.

Moreover, the Examiner also notes that "an interlaced display can only display half of its vertical resolution at a time, followed by the other half. Since an image displayed in this manner, even if distorted, is inherently divided into fields, this reads on the definition of an interlaced image". In effect, the Examiner admits that any attempt to display a progressive scan signal on an interlaced display will result in a distorted image and is therefore results in an *inoperable* combination of displaying a progressive scan signal on an interlaced display that decidedly teaches away from the invention.

In the Advisory Action dated February 27, 2007, the Examiner notes that a line doubler does not necessarily discard every other field and specifically points to http:www.hdtvmagazine.com/glossary.php" as reference. However, at no point does the cited reference describe a line doubler creating a progressive 60 frame per second signal from an interlaced 30 frame per second signal as would be the case if the Examiner was correct in his presumption. On the contrary, the reference describes using frame rate conversion to convert a 1080p/24fps (frame per second) signal to either a progressive 1080p/60 fps (an example of pure frame rate conversion) or 1080i/30 fps (30 fps is equal to 60 fields per second), which is an example of frame rate conversion (24 fps to 30 fps) and interlacing (1080p to 1080i) and *not* line doubling as suggested by the Examiner. As a matter of fact, converting 1080p to 1080i results in the number of full display lines being ***<u>halved</u>*** (i.e., 1080i = 540p) resulting in 50% of the information originally included in the 1008p signal being discarded. Therefore, the Examiner by citing this reference corroborates the Applicant's previous discussion regarding frame rate conversion. To reiterate, since Perlman does not teach frame rate conversion as taught by claim 1, Perlman ***must*** use a flicker filter to eliminate the "objectionable flicker". At no point does Perlman rely upon any form of frame rate conversion as discussed by the reference cited by the Examiner.

In view of the foregoing, it is respectfully submitted that the rejections of all pending claims should be withdrawn.

Respectfully submitted,
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